

PART III. IMPLEMENTATION

The Hine's emerald dragonfly Implementation Schedule outlines actions and estimated costs for the recovery program. It is a guide for meeting the objectives discussed in Part II of this Plan. This schedule indicates task priorities, task numbers, task descriptions, duration of tasks, the responsible agencies, and cost estimates. These actions, when accomplished, should bring about the recovery of the species and protect its habitat. It should be noted that the estimated monetary needs for all parties involved in recovery are identified and, therefore, Part III reflects the total estimated financial requirements for the recovery of this species for the time period noted. The USFWS Endangered Species Program in Region 3 is responsible for implementing the tasks marked "USFWS" in the Responsible Party column of the Implementation Schedule, unless otherwise noted.

Priorities in column one of the following Implementation Schedule are assigned as follows:

Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.

Priority 2 - An action that must be taken to prevent a significant decline in species population/habitat quality or some other significant negative impact short of extinction.

Priority 3 - All other actions necessary to meet the recovery objective.

Key to abbreviations in the Implementation Schedule:

CCFPD	Cook County Forest Preserve District
FP	Forest Preserve
USFWS	U.S. Fish and Wildlife Service
HNF	Hiawatha National Forest, USDA Forest Service
IDNR	Illinois Department of Natural Resources
INHS	Illinois Natural History Survey, Illinois Department of Natural Resources
ISM	Illinois State Museum, Illinois Department of Natural Resources
ISWS	Illinois State Water Survey, Illinois Department of Natural Resources
MDC	Missouri Department of Conservation
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
MNFI	Michigan Natural Features Inventory
MSC	Material Service Corporation
NP	Nature Preserve
NPC	Nature Preserves Commission
ODOW	Ohio Department of Wildlife, Ohio Department of Natural Resources
TBD	To be determined
TNC	The Nature Conservancy
TRS	The Ridges Sanctuary, Inc.
WCFPD	Will County Forest Preserve District
WDNR	Wisconsin Department of Natural Resources

IMPLEMENTATION SCHEDULE FOR HINES EMERALD DRAGON FLY

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
1	1.1.1	Review Federal, state, and private activities	Ongoing	USFWS	100	5	5	5	
1	1.1.2	Develop recovery implementation strategies to promote recovery	5	USFWS	50	10	10	10	
1	1.1.3	Determine watershed ownership	2	USFWS TNC	10	5	5		
1	1.1.4.1	Land protection	3, +TBD	IDNR WDNR MDC MDNR MDOT HNF TNC	6,000+ TBD	2,000	2,000	2,000	Land Acquisition
1	1.1.4.2	Groundwater protection	TBD	TBD	TBD				
1	1.2.2.1	Intensive larval monitoring	3, +TBD	INHS	155	55	50	50	for Lockport Prairie and Mud Lake "North" Y1: initial equipment costs
1	1.2.2.2	Intensive adult monitoring	3, +TBD	INHS	165	45	40	40	for Lockport Prairie and Mud Lake "North" Y1: initial equipment costs
1	2.1.1	Conduct studies: Larval ecology	4	INHS	210	55	55	50	
1	2.1.2	Conduct studies: Adult ecology	4	INHS	134	35	33	33	

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
1	2.2.1	Conduct studies: Correlate larval and adult population sizes	2	INHS	40		20	20	
1	2.2.2	Conduct studies: Analyze techniques for estimating population size	3	INHS	135	55	40	40	Y1: initial equipment costs additional \$15,000
1	2.3.1.1	Conduct hydrology studies in Illinois: Lockport Prairie NP, Romeoville Prairie NP, Middle Parcel, River South Parcel, and Keepataw FP	3	USFWS ISWS INHS	360	210	100	50	
1	2.3.2.1	Conduct hydrology studies in Wisconsin: The Ridges and Mud Lake “North”	3	TBD	360	210	100	50	
1	2.5.1	Conduct studies: Evaluate <i>S. hineana</i> ’s responses to habitat management practices	Ongoing	TBD	400	20	20	20	
1	3.1	Search for <i>S. hineana</i> larval habitat within existing sites	2	WDNR INHS MNFI	30		15	15	
1	3.2	Search for additional <i>S. hineana</i> populations in Michigan	2	USFWS MNFI	60		30	30	
1	3.3	Search for <i>S. hineana</i> populations in Alabama	2	USFWS R4	60		30	30	
1	3.4	Search for <i>S. hineana</i> populations in Missouri	2	USFWS MDC	60		30	30	
1	3.5	Search for <i>S. hineana</i> populations in Wisconsin	2	USFWS WDNR	60		30	30	

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
1	5.1	Encourage private landowners to conserve the Hine's emerald	10	TNC WDNR NPC MDC	50	5	5	5	
2	1.2.1.1	Conduct presence/absence surveys	Ongoing	USFWS+ TBD	20	1	1	1	
2	1.2.1.2	Conduct census surveys	Ongoing	USFWS+ TBD	100	5	5	5	
2	1.3.1.1	Manage habitat: Black Partridge FP	Ongoing	CCFPD	20	1	1	1	
2	1.3.1.2	Manage habitat: Keepataw FP	Ongoing	WCFPD	10	.5	.5	.5	
2	1.3.1.3	Manage habitat: Lockport Prairie NP	Ongoing	WCFPD	50	2.5	2.5	2.5	
2	1.3.1.4	Manage habitat: Long Run Seep NP	Ongoing	IDNR	40	2	2	2	
2	1.3.1.5	Manage habitat: McMahon Woods	Ongoing	CCFPD	10	.5	.5	.5	
2	1.3.1.6	Manage habitat: Middle Parcel	TBD	MSC	TBD				
2	1.3.1.7	Manage habitat: River South Parcel	Ongoing	MSC	200	10	10	10	
2	1.3.1.8	Manage habitat: Romeoville Prairie NP	Ongoing	WCFPD	140	7	7	7	
2	1.3.1.9	Manage habitat: Waterfall Glen FP	Ongoing	DCFPD	10	.5	.5	.5	
2	1.3.2.1	Manage habitat: The Ridges Sanctuary	Ongoing	TRS	400	20	20	20	
2	1.3.2.2	Manage habitat: Mink River	Ongoing	WDNR	10	.5	.5	.5	
2	1.3.2.3	Manage habitat: Mud Lake "North"	Ongoing	WDNR	10	5.25	.25	.25	Y1: Potential culvert replacement cost

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
2	1.3.2.4	Manage habitat: Mud Lake “South”	Ongoing	WDNR	7	2.25	.25	.25	
2	1.3.2.5	Manage habitat: Arbter Lake, North Bay, Three Springs Creek	Ongoing	TBD	TBD				
2	1.3.2.6	Manage habitat: Piel Creek	Ongoing	TNC	TBD				
2	1.3.2.7	Manage habitat: Cedarburg Bog	Ongoing	WDNR	10	.5	.5	.5	
2	1.3.3.1	Manage habitat: Acklund Road, Brevort Lake Road, Horseshoe Bay, I-75 East, I-75 West, Martineau Creek SW, and Summerby Swamp	Ongoing	HNF	102	7	5	5	Y1:Prevent off road vehicle use
2	1.3.3.2	Manage habitat: Snake Island Fens	Ongoing	MDNR	10	.5	.5	.5	
2	1.3.3.3	Manage habitat: Loop 2 Fen	Ongoing	MDNR	10	.5	.5	.5	
2	1.3.3.4	Manage habitat: Misery Bay	Ongoing	TBD	TBD				
2	1.3.4.1	Manage habitat: Grasshopper Hollow	Ongoing	TNC	10	.5	.5	.5	
2	1.3.5.1	Manage habitat: Additional sites	Ongoing	TBD	TBD				
2	2.1.3	Conduct studies: Model population dynamics	2	TBD	70		35	35	
2	2.4	Conduct studies: Genetics	3	USFWS ISM	18	6	6	6	
2	2.6	Conduct studies: Roadkill studies to include strategies for minimizing roadkills	3	INHS	60	20	20	20	
2	2.7	Conduct studies: Water quality monitoring	10	INHS	150	15	15	15	

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
2	2.8.1	Conduct studies on effects of environmental contaminants: Contaminants	3	TBD	45	15	15	15	
2	3.6	Search for <i>S. hineana</i> populations in Ohio	2	USFWS	60		30	30	
2	3.7	Search for <i>S. hineana</i> populations in Indiana	2	USFWS	60		30	30	
2	3.8	Search for <i>S. hineana</i> populations in New York	2	USFWS R5	60		30	30	
2	3.9	Search for <i>S. hineana</i> populations in Maine	2	USFWS R5	60		30	30	
3	2.3.1.2	Conduct hydrology studies in Illinois: Waterfall Glen FP	3	USFWS ISWS INHS	360	210	100	50	
3	2.3.1.3	Conduct hydrology studies in Illinois: Black Partridge FP and McMahon Woods	3	USFWS ISWS INHS	360	210	100	50	
3	2.3.1.4	Conduct hydrology studies in Illinois: Long Run Seep NP	3	USFWS ISWS INHS	360	210	100	50	
3	2.3.2.2	Conduct hydrology studies in Wisconsin: Mud Lake "South"	3	TBD	360	210	100	50	
3	2.3.2.3	Conduct hydrology studies in Wisconsin: Arbter Lake	3	TBD	360	210	100	50	

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
3	2.3.2.4	Conduct hydrology studies in Wisconsin: North Bay	3	TBD	360	210	100	50	
3	2.3.2.5	Conduct hydrology studies in Wisconsin: Three Springs Creek	3	TBD	360	210	100	50	
3	2.3.3	Conduct hydrology studies in Michigan	3	TBD	210			210	
3	2.3.4	Conduct hydrology studies in Missouri	3	TBD	TBD				
3	2.3.5	Conduct hydrology studies in new sites as they are verified	3	TBD	TBD				
3	2.8.2	Conduct studies on the effects of environmental contaminants: Mosquito abatement programs	3	TBD	45	15	15	15	
3	3.10	Search for <i>S. hineana</i> populations in Arkansas, Iowa, Illinois, Kentucky, Minnesota, Tennessee, West Virginia, and Canada	2	USFWS R3, R4, R5 TBD	170		85	85	
3	3.11	Assess potential for <i>S. hineana</i> in other states	2	USFWS R3, R4, & R5)	50		25	25	
3	5.2	Inform local and county governments of Hine's emerald dragonfly goals	5	USFWS WDNR MDNR NPC	5	1	1	1	
3	5.3	Develop outreach material on <i>S. hineana</i> life history and conservation	3	WDNR IDNR MDNR	6	1	1	4	

Priority #	Task #	Task Description	Task Duration (Years)	Responsible Party	Total Cost	Cost Estimates (\$000)			Comments
						Year 1	Year 2	Year 3	
2	4.1	Develop captive rearing protocols	TBD	INHS	TBD				
3	4.2	Implement captive rearing programs	TBD	USFWS	TBD				As needed basis
3	4.3	Assess sites for reintroduction, introduction, or augmentation	TBD	USFWS	TBD				As needed basis
3	4.4	Implement reintroduction, introduction, or augmentation	TBD	USFWS	TBD				As needed basis
3	4.5	Monitor reintroduced, introduced, and/or augmented populations annually	TBD	TBD	TBD				As needed basis
3	6.1	Maintain a clearinghouse for <i>S. hineana</i> information	Ongoing	USFWS	10	.5	.5	.5	
3	6.2	Conduct Recovery Team meetings at least biannually to evaluate progress	Ongoing	USFWS	10		2		Biannual Meeting
3	6.3	Revise plan as appropriate at five year intervals	Ongoing	USFWS	TBD				